The Pythagorean Theorem

The Pythagorean Theorem states:

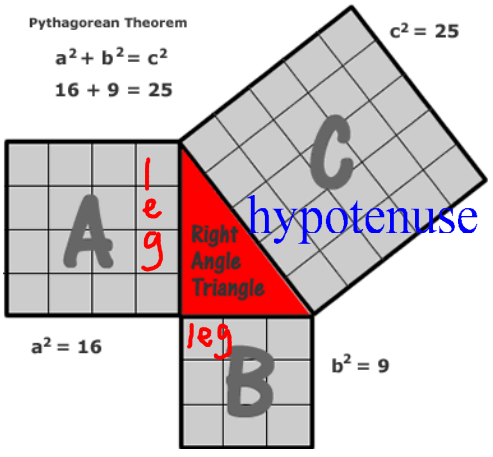
In any right triangle, the area of the square whose side is the hypotenuse (the side opposite the right angle) is equal to the sum of the areas of the squares whose sides are the two legs (the two sides that meet at a right angle).

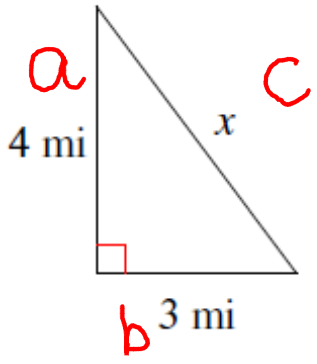
The theorem can be written as an equation:

$$a^2 + b^2 = c^2,$$

where c represents the length of the hypotenuse, and a and b represent the lengths of the other two sides.

The Pythagorean theorem is named after the Greek mathematician Pythagoras, who by tradition is credited with its discovery and proof, but it is likely that the idea predates.





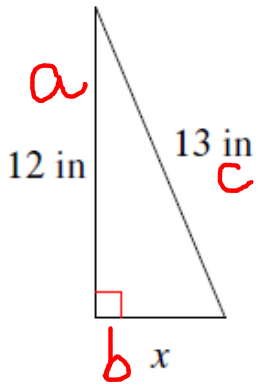
$a^2 + b^2 = c^2$

$4^2 + 3^2 = c^2$

$16 + 9 = c^2$

$\sqrt{25} = \sqrt{c^2}$

$5 = c$



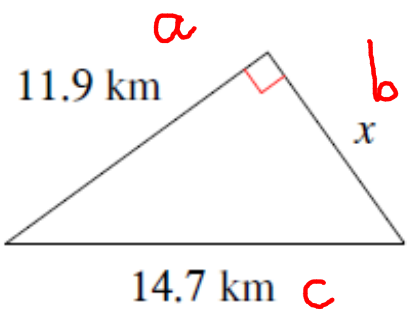
$12^2 + b^2 = 13^2$

$144 + b^2 = 169$

$-144 \qquad -144$

$\sqrt{b^2} = \sqrt{25}$

$b = 5$



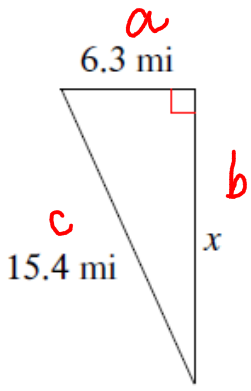
$11.9^2 + b^2 = 14.7^2$

$141.61 + b^2 = 216.09$

$-141.61 \quad -141.61$

$\sqrt{b^2} = \sqrt{74.48}$

$b = 8.63$



$6.3^2 + b^2 = 15.4^2$

$39.69 + b^2 = 237.16$

$-39.69 \quad -39.69$

$\sqrt{b^2} = \sqrt{197.47}$

$b = 14.05$